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PROCEEDINGS AT THE MEETINGS OF THE PHYSICAL SOCIETY

SESSION 1945-46

19 *September* 1945

The twenty-third meeting of THE COLOUR GROUP, at Imperial College, London S.W.7. Dr. R. K. Schofield was in the Chair.

A lecture, with colour films and demonstrations, on " Methods for investigating colour discrimination in insects " was delivered by Dora R. Ilse, D.Phil.

---

28 *September* 1945

The eighteenth meeting of THE OPTICAL GROUP, at Imperial College, London S.W. 7. Professor L. C. Martin was in the Chair.

A lecture on " Evolution of the dividing engine " was delivered by E. Wilfred Taylor. A film entitled " Motion-picture records of the whole sky " was shown.

---

5 *October* 1945

Science Meeting, at Imperial College, London S.W. 7. The President, Professor D. Brunt, was in the Chair.

David William Elson (transferred from Student Membership) and Allen Goodrich Shenstone were elected to Fellowship.

It was announced that the Council had elected the following to Student Membership : Robert Batchelor, Michael Julian Maurice Bernal, William Ralph Blow, James William Crawford, Albert Julius Elleman, D. J. Hudson, Susanna Korn, Charles W. Morley, Michael William Ovenden, John Oulton Quantrell, William Bernard Richardson, Thomas Templeton, Hyman Woolfe.

The following papers were read and discussed :

" A method for obtaining small mechanical vibrations of known amplitude ", by D. H. Smith, D.Sc.

" The photographic action of x rays ", by S. R. Pelc, Ph.D.

" The hysteresis of the angle of contact of mercury ", by the Rev. G. D. Yarnold, M.A., D.Phil.

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17 *October* 1945

Inaugural meeting of THE LOW-TEMPERATURE GROUP, at The Royal Society, Burlington House, London W. 1. Professor Sir Alfred Egerton was in the Chair.

A draft constitution of the Group was discussed and adopted. The Chairman, Vice-Chairman, Secretary and Committee of the Group for 1945–46 were elected.

An address on " Some technical problems of gas separation " was given by A. M. Clark.

---

19 *October* 1945

Science Meeting, at The Royal Society, Burlington House, London W. 1. The President, Professor D. Brunt, was in the Chair.

The following were elected to Fellowship : John Boston Beecher, Raymond Martin Boorman, Francis Haddon Bowen, Arthur Breeze-Carr, Pierre Albert Bricout, Henry Arthur Druett, Eric Paul George, Robert Edward William Iggkeden, Henry Lipson,

Alfred Charles Bernard Lovell, Harold Overton, Ernest Ower, Owen George Weller, Robert Lewis Woolley and Walter Zehden.

It was announced that the Council had elected the following to Student Membership : Freda Betty Freeman, Audrey Marian Glauert, Eileen Beryl Harriss, William Maurice, Gordon von Noehlsen, Philip Leighton Parsons, Derrick Arnold Patient, James Clifford Rees, Keith Robinson, Geoffrey Donald Sims, Hilary Tadman, John William George Taylor, David John Cabena Yates.

A lecture on " The spectral structure of the inert gases " was delivered by Professor Bengt Edlén.

---

14 *November* 1945

The twenty-fourth meeting of THE COLOUR GROUP, at the Lighting Service Bureau, Savoy Hill, London W.C. 2. Dr. R. K. Schofield was in the Chair.

A lecture on " Colorimetry in the glass industry " was given by J. G. Holmes, B.Sc., and was followed by an informal discussion.

---

6 *December* 1945

Science Meeting, at the Science Museum, London S.W. 7. The President, Professor D. Brunt was in the Chair.

The following were elected to Fellowship : Bruce Henry Burgess, Norman Edward Cusack, Leslie Bernard Hunt, Charles Lessner, John Millar Meek, Joseph Tunstead.

It was announced that the Council had elected the following to Student Membership : Jerzy Adam, Edward Walter Bastin, Norman Frank Blight, Patrick Bomyer, Raymond Bowers, Robert James Helton Branthwaite, Laurence Reade Cooper, Dennis Peter Craft, Raymond Charles Curnow, William Kenneth Donaldson, Jósef Dlugosz, John Lewis Fanner, Doris Evelyn Gould, Peter William Hoare, Robert Tudor Jarman, Frederick Alexander Jenner, Eric Walter Lee, Peter Donald Lomer, Frederick John Brian Oliver, Donald William Pashley, John Rolfe, Catherine Patricia Strang, Derek Alan Webber, William Leslie Wilcock.

The Charles Chree Medal and Prize were presented to John A. Fleming, Sc.D., who afterwards delivered the third Charles Chree Address, taking as his subject "Geomagnetic secular variations and surveys ".

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12 *December* 1945

Science Meeting, at the Science Museum, London S.W. 7. The President, Professor D. Brunt, was in the Chair.

The following were elected to Fellowship : Madge G. Adam, John Alois Becker, Alan West Brewer, Geoffrey Fernis Dixon, John Macfie Holm, Gwyn Owain Jones, Edward K. Kaprelian, Alec Herbert King, Samuel Thomas Lunt, Denis Moody, Reginald Charles Moore, Neil Pentland, Alan Turner Pickles, John Turton Randall, Arthur Rushton, John Moffett Cuthbert Scott, Sudarshan Prasad Sinha, David Gurney Arnold Thomas, Alfred René John Paul Ubbelohde, Morgan Thomas Watkins, Bernard Nelson Watts.

The twenty-second (1945) Duddell Medal was presented to Professor J. T. Randall, D.Sc., F.R.S., who afterwards gave a lecture, with demonstrations, on his work on phosphors and the magnetron.

The first (1945) Charles Vernon Boys Prize was presented to A. H. S. Holbourn, M.A., D.Phil., who afterwards gave an account of his work on " The measurement of the angular momentum of radiation ".

---

14 *December* 1945

The nineteenth meeting of THE OPTICAL GROUP, at the Science Museum, London S.W. 7. Professor L. C. Martin was in the Chair.

An informal discussion on "The coating of optical components to reduce reflection " was opened by K. M. Greenland, Ph.D.

---

19 *December* 1945

The twenty-fifth meeting of THE COLOUR GROUP, at Imperial College, London S.W. 7. Dr. R. K. Schofield was in the Chair.

A lecture on " Colour discrimination, the visibility curve and the trichromatic theory " was given by W. S. Stiles, D.Sc., Ph.D., and was followed by an informal discussion.

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16 *January* 1946

The second meeting of THE LOW-TEMPERATURE GROUP, at the Science Museum, London S.W. 7. Sir Alfred Egerton was in the Chair.

An informal discussion on " The needs of industry for investigations to provide fundamental data " was opened by P. M. Schuftan.

---

30 *January* 1946

The twenty-sixth meeting of THE COLOUR GROUP, at Imperial College, London S.W. 7. Dr. R. K. Schofield was in the Chair.

The following papers were read and discussed :

" A colorimeter with six matching colours ", by R. Donaldson, M.A.

" A direct-reading photoelectric spectrophotometer ", by T. B. Davenport, B.Sc.

---

8 *February* 1946

Science Meeting, at the Science Museum, London S.W. 7. The President, Professor D. Brunt, was in the Chair.

William Ernest Bennett, James William Jeffery and Peter Longdale Temple were elected to Fellowship.

It was announced that the Council had elected the following to Student Membership : Richard Sidney Babbs, Peter Frederick Barker, R. J. Fletcher, Gordon David Reid Granick, George William Hamstead, Richard Maxwell Harkness, Keith William Ogilvie, Saxon Maclean Poole, Ruth Anne Lund Roberts, Stanley Keith Runcorn, Sydney Eugene Veronique.

The second Rutherford Memorial Lecture was delivered by Professor J. D. Cockcroft, C.B.E., Ph.D., F.R.S., who took as his subject " Rutherford : Life and work after the year 1919, with personal reminiscences of the Cambridge period ".

---

15 *February* 1946

Science Meeting, at the Science Museum, London S.W. 7. The President, Professor D. Brunt, was in the Chair.

The following were elected to Fellowship, the last eighteen being transferred from Student Membership : Brebis Bleaney, Cecil Leonard Boltz, Kenneth George Budden, Bohdan Medusa Cwilong, Maurice Charles Pierre Desirant, David Henry Follett, John Samuel Forrest, Harold Arthur Freeman, William Anthony Greenwood, Geoffrey Thomas Harris, Eric William Masson Heddle, William Campbell Heselwood, John Riley Holt, John Anthony Wynne Huggill, Lamek Hulthén, Tudor Stanley George Jones, Walter Alfred Langmead, Constance Marie Lovett, Malcolm McCaig, Ladislaus Marton, Frank Rodney Moody, Ivan Brian Perrott, Maurice Henry Lecorney Pryce, Edward Rollinson, Joseph Rotblat, John Arthur Saxton, Helen Scouloudi, Albert Robert Service, Edward Samuel Shire, G. H. St. Claire-Johnson, Harold Henry Watson, Robert Foster Wilkinson, Robert Charles Gooding Williams, George Andrew Park Wyllie ; Harry Edward Airey, Peter Milton Barham, Francis Julian Bradshaw, Basil Hugh Briggs, Peter Crombie Calder, Miriam Gilbert, Geoffrey Blakeley Greenough, Douglas Hardy, James Morden Hough,

Betty Hunt, Robert Henry Kay, Joan Kelly, Dennis Pallant, Percy Charles Ruggles, Alexander Rawson Stokes, Ronald Tiffen, Theodore James Tulley, Anthony Horace Willbourn.

It was announced that the Council had elected the following to Student Membership : John Albert Bleach, Derek Coulthard, Raymond Charles Curnow, Jan Marcin Engel, Basil Arthur Fancourt, Tom Fawzi, Alan Neville Gent, Margaret Enid Hall, Arthur Emlyn Dawson Harris, Paul Francis Hatherly, Kenneth Roy Heath, Thomas Jermyn, Thomas Reginald Maynard, Arthur Cyril Moore, Bethune William Neill, Lewis Percival Newman, Reginald Percy Penrose, Eric Pitts, Thomas Noel Reynolds, Raymond Jeffrey Slaughter, Dorothy Jean Smith, Richard Thomas Albert Standford, William John Symes, Dewi Gwynfa Bailey Thomas, Krishnarao Govindarao Torgal, Patrick Joseph Treanor, Kashi Prasad Verma, Margaret Elizabeth Weiss, Peter Charles Williamson, Frederick Ronald Young.

A lecture on " The physical and rheological properties of glass " was delivered by G. O. Jones, M.A., Ph.D., and was followed by an informal discussion.

---

1 *March* 1946

The twentieth meeting of THE OPTICAL GROUP, at the Science Museum, London S.W. 7. Instr.-Capt. T. Y. Baker, was in the Chair.

The following papers were read and discussed :

" The angle-control aspherizing machine ", by C. R. Burch, F.R.S.

" An improved type of Schmidt camera ", by E. H. Linfoot, B.A., D.Phil.

" Decentred aspheric plates " by E. H. Linfoot, B.A., D.Phil.

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13 *March* 1946

The twenty-seventh meeting of THE COLOUR GROUP, at the Science Museum, London S.W. 7. Dr. R. K. Schofield was in the Chair.

A lecture on " Light absorption and elementary wave mechanics " was delivered by E. J. Bowen, M.A., F.R.S., and was followed by an informal discussion.

The meeting was preceded by the sixth Annual General Meeting of the Colour Group, for the presentation of the Committee's report on the work of the Group in 1945–46 and for the election of Officers and Committee for 1946–47.

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13 *March* 1946

The third meeting of THE LOW-TEMPERATURE GROUP, at the Works of the British Oxygen Company, Wembley, Middlesex.

The older and the newer processes for preparing liquid and gaseous oxygen were described and inspected.

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15 *March* 1946

Science Meeting, at Imperial College, London S.W. 7. The President, Professor D. Brunt, was in the Chair.

The following were elected to Fellowship, the last three being transferred from Student Membership : William Ernest Doran, Eric Basil James, Robert Latham, Alan Lawson Little, Maurice Henri Léonard Pirenne, Ralph Ellis White ; John Gadsby, Alfred Peter Henry Jennings, Ronald William Shephard.

It was announced that the Council had elected the following to Student Membership : Desmond Martin Slingsby Bagguley, Ian David Leonard Ball, John James Knight, Gordon Kingsley Monks, Raymond Paul Rose, Leyland Whylock Shawe, Peter Sleightholm, Robert W. Taylor, William Harris Thorning, Raymond Marriage Wallis, Gwyn Clement Williams, Geoffrey Leonard Wilson.

The following papers were read and discussed:

" The relation between the brightness and temperature of a total radiator ", " The ratio of the new international lumen to the light-watt ", " The determination of the initial temperature of a cooling total radiator from measurements of the spectral distribution of the energy emitted during cooling ", and " Light emission during cooling of a Planckian radiator ", by E. F. Caldin, M.A., B.Sc.

" Band systems in the spectrum of nitrogen ", by A. G. Gaydon, D.Sc., and Mme R. Herman, D. ès Sc.

" The construction and use of a ' fly's eye ' for assisting x-ray structure analysis ", by A. R. Stokes, M.A., Ph.D.

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29 *March* 1946

The twenty-first meeting of THE OPTICAL GROUP, at Imperial College, London S.W. 7 Instr.-Capt. T. Y. Baker was in the Chair.

The following demonstrations were given:

" Effects of ultra-violet radiations of different wave-length upon luminescence ", by J. A. Kitchener, Ph.D., and C. G. A. Hill, B.Sc.

" Comparator for checking curvature of unpolished lenses ", by R. S. Clay, D.Sc.

" Measurement of small linear motions by optical methods ", by R. G. W. Hunt, B.Sc.

A film of " Meiosis of sperm cells of grasshopper ", taken with a phase-contrast microscope, was shown by E. H. Linfoot, B.A., D.Phil.

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8 *April* 1946

Science Meeting, held jointly with the Royal Meteorological Society, at the Royal Institution, London W. 1. The Chair was taken by Mr. G. Manley, M.A. (President, R. Met. Soc.) during the opening session, and afterwards by Professor D. Brunt (President, Phys. Soc.).

The following were elected to Fellowship, the last five being transferred from Student Membership: Eric Charles Baxter, John Douglas Cockcroft, Lionel J. Collier, John Hudson Davies, Alexander Constantine Denisoff, Percy John Edwards, Norman Feather, Colin Charles Hall, John Henry Jeffree, Richard Harday Knight, Edward Arthur Lovell, John Blackburn Murgatroyd, Samuel Tolansky, Reinhold Adolf Philipp Wertheim; Roy Drakeley Bruce, Geoffrey George Parfitt, Trevor Albert John Stocker, Donald Williams, Geoffrey Philip Lewis Williams.

A Conference on " Meteorological factors in radio-wave propagation " was opened by Sir Edward Appleton, K.C.B., Sc.D., F.R.S.

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26 *April* 1946

The twenty-second meeting of THE OPTICAL GROUP, at Imperial College, London S.W. 7. Instr.-Capt. T. Y. Baker was in the Chair.

The following papers were read and discussed:

" Schwarzschild-Ritchey-Chrétien reflecting microscopes ", by C. R. Burch, F.R.S.

" A Lenouvel interferometer " (with demonstration), by F. T. Bannister, W. J. Bates and C. R. Burch, F.R.S.

The meeting was preceded by the fifth *Annual General Meeting of the Optical Group* for the presentation of the Committee's report on the work of the Group in 1945–46 and for the election of Officers and Committee for 1946–47.

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16 *May* 1946

Extraordinary General Meeting and *Annual General Meeting*, at the Royal Institution, London W. 1. The President, Professor D. Brunt, was in the Chair.

It was resolved " That Article 36 of the Articles of Association be suspended for a period of one year ".

The minutes of the previous Annual General Meeting, held on 23 May 1945, were read and confirmed.

The reports of the Council and the Honorary Treasurer and the Annual Accounts for 1945 were adopted.

The Officers and Council and the Auditors for 1946–47 were elected.

Votes of thanks were accorded to the Rector and Governing Body of Imperial College, the President and Council of the Royal Society, the Managers of the Royal Institution, and the Director of the Science Museum for excellent accommodation at meetings ; to the Royal Commission for the Exhibition of 1851 and Dr. Evelyn Shaw for the office and library accommodation at 1 Lowther Gardens, Prince Consort Road, London S.W. 7 ; to Dr. A. F. C. Pollard for preparing the U.D.C. Index Slips for the *Proceedings* ; and to the retiring Officers and Council.

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16 *May* 1946

Science Meeting, at the Royal Institution, London W. 1. The President, Professor D. Brunt, was in the Chair.

The following were elected to Fellowship, the last four being transferred from Student Membership : Edgar Harold Walter Banner, William Stanley Bowler, John Espenett Caffyn, Maxwell Dauer, Dai Ashton Davies, Norman David Imrie, John Arnold Lane, Sidney Barron Osborn, William Henderson Ramsey, Walter L. Stern, Edward Alfred Stewardson, Norman Thorley, Richard Franz Jules Vogel, William John Whitehouse ; Arthur Norman Hunter, Richard Claude Lane, Donald Vernon Osborne, Nigel Graham Trott.

It was announced that the Council had elected the following to Student Membership : Ian Alexander Gatenby, Lewis Roy Griffin, John Williamson MacAnuff, Audrey Doris Stuckes, David George Ware.

The first (1946) Holweck Prize was presented to Professor C. Sadron, who afterwards delivered the Holweck Discourse on " Some physical properties of long-chain molecules ".

His Excellency the French Ambassador (M. René Massigli) and distinguished representatives of the Société Française de Physique were present.

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23 *May* 1946

The twenty-eighth meeting of THE COLOUR GROUP, at the Royal Photographic Society, London S.W. 7. Dr. R. K. Schofield was in the Chair.

A paper on " The colour sensitivity of the retina within the central fovea of man " was read by L. C. Thomson, M.D., and W. D. Wright, D.Sc., and was followed by an informal discussion.

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28 *June* 1946

The twenty-third meeting of THE OPTICAL GROUP, at the Northampton Polytechnic, London E.C. 1. Instr.-Capt. T. Y. Baker was in the Chair.

The following papers were read :

" A survey of pupil diameters at background brightnesses ranging from darkness to full daylight " and " The night focus of the eyes ", by J. Tunstead, Ph.D.

" Acrylic artificial eyes ", by A. Kingston and E. F. Fincham.

" Some notes on visual acuity ", by Professor L. C. Martin, D.Sc.

" The variation of visual acuity with pupil diameter ", by E. W. H. Selwyn, B.Sc.

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5 *July* 1946

Science Meeting, at the Science Museum, London S.W. 7. Dr. W. S. Stiles was in the Chair.

The following were elected to Fellowship, the last three being transferred from Student Membership: Jack Kenneth Barraclough, Hugh Cecil Binstead, William Bleloch, Alan Hugh Boud, Eric Harold Boyd, Denis Frederick Bracher, Herbert Walter Davies, William Cusack Fahie, John Wilson Findlay, Ramon Enrique Gaviola, Merryn Geoffrey Harwood, Stephen Patric Francis Humphreys-Owen, Egil A. Hylleraas, Mohamed Ibrahim Malik, Joseph A. Manché, Vikram A. Sarabhai, George Boris Townsend, Donald Whittaker, Alexander Wood; Herbert Cairns Bolton, Audrey May Brasnett Douglas (*née* Parker), Ronalde Philip Le Blanc.

It was announced that the Council had elected the following to Student Membership: Norman Herbert Edgar Ahlers, Donald Kenneth Ashpole, Norman Walter Bellwood, Kenneth Francis Bishop, Norman Charles Featherstone Chappell, Geoffrey Wallwork Eastwood, Gunther Eichholz, Michael Leslie Ferrar, Cyril Owen Green, William Ronald Loosemore, Horace Manley, William Mallinson McIsaac, Richard William Stevens.

The following demonstrations were given:

"A simple optical model demonstrating the principle of the Bragg x-ray spectrometer" and "A mechanical model illustrating the uranium chain reaction", by F. A. B. Ward, B.Sc.

The following papers were read and discussed:

"The absorption of sound in a homogeneous porous medium", "An apparatus for accurate measurement of the acoustic impedance of sound-absorbing materials", and "The propagation of sound between walls of porous material", by R. A. Scott, Ph.D.

"Cathode-luminescence: Part I. Growth and decay processes; Part II. Current saturation and voltage effects; Part III. Discussion of results", by J. W. Strange, Ph.D., and S. T. Henderson, M.A., Ph.D.

22–27 *July* 1946

At the Cavendish Laboratory, Cambridge. *International Conference* on Fundamental Particles and Low Temperatures, opened by Professor Neils Bohr, For.Mem.R.S. (Copenhagen).

REPORT OF COUNCIL FOR THE YEAR ENDED 31 DECEMBER 1945

INTRODUCTORY AND GENERAL

In many ways 1945 was a remarkable year in the history of the Society. The Holweck Prize was successfully established, the Low-Temperature Group was inaugurated, and the heavy work of preparation for the resumption of the Exhibition of Scientific Instruments and Apparatus in January 1946 had to be undertaken in what were little better than war-time conditions. The membership again showed a satisfactory expansion, and the financial position was maintained with no additional cost to the members and subscribers.

The continued generosity of the Royal Commission for the Exhibition of 1851 in providing the Society with excellent accommodation at 1 Lowther Gardens is gratefully acknowledged. In the summer it became necessary to take immediate steps to replace most of the office and library furniture, which was the property of the Royal Commission and the Institute of Physics, and the opportunity was taken of adding to the Library one large room which will eventually also be used for meetings of the Council and committees. The process of re-equipment will be slow and costly, but the result will be much to the advantage of all concerned, visitors and staff alike. In the first half of 1945 staff difficulties were even worse than in previous years, and it was not until the later months that new appointments and additions to the staff became possible.

The least satisfactory feature of the work to be reported is in respect of publications; meagreness of the official allowance of paper and shortage of labour and equipment at the printers' works are the chief difficulties. By an exhausting effort a small edition of the Exhibition Catalogue was produced in time, but the long and increasing delays in the printing of the *Proceedings* and the *Reports on Progress in Physics* have caused deep concern. The Officers and Council are taking all steps available to them to bring about some acceleration.

HOLWECK MEDAL AND PRIZE

In January 1945 the President, Prof. E. N. da C. Andrade (later Foreign Secretary) issued to the Fellows and friends of the Society an appeal for contributions for the foundation of an annual prize in the interests of the closest co-operation with French physics and as a memorial to Dr. Fernand Holweck, the distinguished Director of Research at the Institut du Radium in Paris, who died at the hands of the Gestapo, and to other physicists who met their deaths or suffered great privation during the German occupation of France. A sum of nearly £900 was collected, and the Council decided that it should be so invested as to enable a Holweck Prize of £100 and a parchment certificate to be awarded annually for ten years to a French and to an English physicist alternately for distinguished work in experimental physics. The presentation to the French winner is to be made in London, beginning in 1946, and that to the British winner in Paris, beginning in 1947. The scheme evoked the liveliest interest and profoundest gratitude in French circles, and the Société Française de Physique, whose intimate co-operation in the selection of the prize-winners is to be sought, has founded a Holweck Medal, to be presented to each recipient of the Holweck Prize.

MEETINGS

During the year eleven Science Meetings took place, in addition to those of the Groups, and the average attendance was probably larger than in any previous year for which comparable data are available.

At three of the meetings, at Imperial College, papers and demonstrations were presented and discussed. Three meetings were held at the Science Museum, one of them for a discussion on the electron microscope and its uses (*Proceedings*, **57** (1945), p. 564), and two for special addresses delivered by recipients of medals and prizes noted in the following paragraphs. Three meetings, held at the Royal Institution, were the occasions of special lectures, also noted below. The remaining two meetings, in the rooms of the Royal Society, were devoted to lectures by distinguished visitors, Dr. A. J. Guinier of the Laboratoire d'Essais, Paris, on "X-ray investigations of crystal lattice imperfections" (*Proceedings*, **57** (1945), p. 310), and Prof. B. Edlén of the University of Lund, on "The spectra of the inert gases".

At the Royal Institution on 23 May, Prof. E. N. da C. Andrade delivered his Presidential Address on " The history and future of the Physical Society " (*Proceedings*, **57** (November 1945), p. xxi), and an Annual General Meeting followed for the presentation of the Reports of the Council and the Honorary Treasurer for 1944 and for the election of Officers and Council for 1945–46.

The Council records its thanks to the President and Council of The Royal Society, the Managers of the Royal Institution, the Director of the Science Museum and the Governing Body of Imperial College for their hospitality.

THOMAS YOUNG ORATION

At the Royal Institution on 29 June Professor Ragnar Granit (Stockholm) delivered the fourteenth Oration, the subject of which was " The electrophysiological analysis of the fundamental problem of colour reception " (*Proceedings*, **57** (1945), p. 447).

GUTHRIE LECTURE

The twenty-ninth Guthrie Lecture was delivered at the Royal Institution on 6 July by Professor Arturo Duperier (University of Madrid and Imperial College, London), who took as his subject " The Geophysical aspect of cosmic rays " (*Proceedings*, **57** (1945), p. 464).

CHARLES CHREE MEDAL AND PRIZE

At the Science Museum on 6 December the third (1945) Medal and Prize were presented to Dr. John A. Fleming, Director of the Department of Terrestrial Magnetism of the Carnegie Institution, Washington, the award being in recognition of Dr. Fleming's long and valuable service to Geophysics. Dr. Fleming afterwards delivered the third Charles Chree Address, the subject of which was " Geomagnetic secular variations and surveys " (*Proceedings*, **58** (1946), p. 213).

DUDDELL MEDAL

The twenty-first (1944) Medal was presented to the late Dr. F. W. Aston at a Science Meeting at the Royal Institution on 23 May, the presentation having been postponed on account of the medallist's ill-health. The Council records with great regret the death of Dr. Aston on 20 November 1945.

The Council awarded the twenty-second (1945) Medal to Professor J. T. Randall (University of St. Andrews) for his work on phosphors and the cavity magnetron. The presentation took place at the Science Museum on 12 December and was followed by a lecture and demonstrations by the medallist (*Proceedings*, **58** (1946), p. 247).

CHARLES VERNON BOYS PRIZE

The Council made the first (1945) award of the Prize to Dr. A. H. S. Holbourn (Clarendon Laboratory, Oxford) for his measurement of the angular momentum of radiation. A discourse on this work was given by the prizeman on the occasion of the presentation at the Science Museum on 12 December.

ADDENBROOKE BEQUEST

The volumes selected for the Society's Library in 1945 have not yet been received. The titles will be announced in due course in the Notices to Members and communicated to appropriate bodies.

PROCEEDINGS

A slightly bigger official allowance of paper made possible a small increase both in the size, and also in the number of copies printed, of Volume **57** (1945), as compared with the previous volume. The space devoted to advertisements in each of the six Parts remained unchanged. The Council again records its thanks to Dr. A. F. C. Pollard for his valuable services in the preparation of the U.D.C. Index Slips, which are supplied to

those members and subscribers who apply for them. The reprinting of those war-time issues the stocks of which have been exhausted is being continued as the supply of paper permits, but progress is still disappointingly slow.

REPORTS ON PROGRESS IN PHYSICS

It is regretted that very slow progress has been made in the printing of Volume 10 (1944–45), which it was hoped to publish early in 1946, and in the reprinting of Volume 4 (1937), which should have been ready during 1945. Steps are being taken to expedite the appearance of both these volumes. Copies of all the available volumes (only Vols. 7, 8 and 9 remain at the time of writing this Report) have been in great demand, especially since the liberation of European countries from former enemy occupation. The continued co-operation of the American Institute of Physics in supplying copies of the *Reports* to American physicists is again most gratefully acknowledged.

REPRESENTATION ON OTHER BODIES

The following were the Society's representatives on other Bodies in 1945 :—

National Committee for Physics : Dr. Ezer Griffiths, Prof. N. F. Mott, Mr. R. S. Whipple.

National Committee for Scientific Radio : Mr. J. A. Ratcliffe, Sir Robert Watson-Watt.

Committee of Management of Science Abstracts : Mr. J. H. Awbery, Prof. A. Ferguson, Dr. W. Jevons, Dr. D. Owen.

Board of the Institute of Physics : Prof. A. O. Rankine, Dr. W. Jevons.

Council of the British Society for International Bibliography : Prof. L. C. Martin.

Parliamentary and Scientific Committee : Prof. E. N. da C. Andrade, Prof. A. O. Rankine.

Joint Committee to facilitate Co-operation between the Physical Society and the Institute of Physics : Prof. E. N. da C. Andrade, Prof. D. Brunt, Prof. A. O. Rankine.

Joint Publications Board of the Physical Society and the Institute of Physics : Mr. J. H. Awbery, Prof. G. I. Finch, Dr. W. S. Stiles, Dr. W. D. Wright.

R. W. Paul Instrument Fund Committee : Prof. A. O. Rankine.

Röntgen Jubilee Celebrations Committee : Dr. W. Jevons.

British Standards Institution Committees : Prof. H. T. Flint.

International Psychrometry Committee : Prof. D. Brunt.

Association of Scientific Workers Conference Committee : Dr. W. B. Mann.

Royal Institute of Chemistry Conference on Definitions of Scientific Terms : Dr. D. Owen, Prof. A. O. Rankine, Dr. H. Shaw, Dr. W. D. Wright.

OBITUARY

The Council records with regret the deaths of the following Fellows :—Professor Eugène Bloch, Mr. W. M. Brett, Mr. J. E. Calthrop, Professor J. K. Catterson-Smith, Mr. W. D. Eggar, Professor Charles Fabry (Honorary Fellow), Mr. G. S. Fawcett, Sir Ambrose Fleming (Original Fellow), Mr. A. T. Hare, Mr. G. A. Heath, Major E. O. Henrici, Mr. D. E. Jones, Mr. W. Lucas, Major C. E. S. Phillips, Sir Napier Shaw, Dr. R. F. Schmid, Dr. J. F. Sirks, Professor E. J. Williams, Mr. J. Young.

MEMBERSHIP

Despite heavy losses by death, there was a notable expansion of total membership for the fifth year in succession ; it has been exceeded on only two previous occasions : in 1932, when members of the Optical Society came in, and in 1942, when there was a very large influx of Student Members. The number of transfers from Student Membership to Fellowship in 1945 was more than double that in any previous year ; the number of newly elected Fellows was exceeded only in 1942 ; and the net increase of Fellowship was far greater than in any year excepting 1932. There is a slight net decrease in the Student Membership, in spite of the fact that the number elected during the year was exceeded only in 1942 and in 1943.

Roll of Membership		Hon. Fellows	Hon. Fellow, Optical Society*	*Ex-officio* Fellows	Fellows	Student Members	Total
Totals, 31 Dec. 1944		11	1	4	1087	279	1382
Changes during 1945	Newly elected				56 } 108	68	
	Transferred				52 }	52 }	
	Deceased	1			19 } 28	} 72	
	Resigned				9 }	5 }	
	Lapsed or suspended					15 }	
	Net increase	−1			80	−4	75
Totals, 31 Dec. 1945		10	1	4	1167	275	1457

* Excluding one who is also an Honorary Fellow of the Physical Society (in previous column).

GROUPS

Colour Group

The fifth Annual General Meeting of the Group was held at Imperial College on 21 March 1945, when Mr. J. Guild and Dr. W. D. Wright were re-elected as Chairman and as Honorary Secretary, respectively, and the Committee for 1945–46 was elected.

During the year six Science Meetings were held, particulars of which will be found elsewhere in the *Proceedings* (**57,** (1945) pp. ix, x and xi; and **58** (1946), pp. vi, vii and viii).

Considerable progress was made with the reports of the Sub-Committees on Defective Colour Vision in Industry and Colour Terminology, and the former should be ready for publication in 1946.

Optical Group

At the fourth Annual General Meeting of the Group, which was held at Imperial College on 20 April 1945, Instr.-Capt. T. Y. Baker and Mr. E. W. H. Selwyn were elected as Chairman and as Honorary Secretary, respectively, and the Committee for 1945–46 was elected.

Five Science Meetings were held in 1945, and are briefly recorded elsewhere in the *Proceedings* (**57** (1945), pp. ix, x and xii; and **58** (1946), pp. vi and vii). Three of the papers read at these meetings have been published in the *Proceedings* (**57** (1945), pp. 286, 403 and 543).

Low-Temperature Group

The Low-Temperature Group was inaugurated at a General Meeting held in the rooms of the Royal Society on 17 October 1945, when the Officers and Committee for 1945–46 were elected, Sir Alfred Egerton being elected as Chairman, Sir Charles Darwin as Vice-Chairman, and Mr. J. H. Awbery as Honorary Secretary.

At the first Science Meeting, also held on 17 October, Mr. A. M. Clark delivered a lecture on " Some technical problems of gas separation ", which is to be printed in the *Chemical Trade Journal.*

Membership

The membership of the three Groups on 31 December 1945 was as follows :—

	Colour Group	Optical Group	Low-Temperature Group
Members of the Physical Society	87	156	30
Members of participating bodies	63	68	22
Members of firms subscribing for sustaining membership	18	97	..
Other Members	10	5	2
Totals	178	326	54

REPORT OF THE HONORARY TREASURER FOR THE YEAR ENDED 31 DECEMBER 1945

Three recommendations by the auditors have been embodied in the Accounts for 1945: (i) the balance of £83 1*s*., which has remained in the Progress Reports Reserve Account for the last ten years and is no longer likely to be called upon, is now transferred to the general fund; (ii) a grant of £75 is made from the general fund to the Duddell Memorial Trust Fund in order to meet the present deficit; and (iii) the expenditure of £154 for office furniture and equipment in 1945 is charged, as was that in 1938, against the Herbert Spencer Fund, the balance of which would normally have been exhausted several years ago in accordance with the terms of the bequest.

With these adjustments the accounts show an excess of income over expenditure of £869, which is £275 less than in 1944; the total income (£5319) and the total expenditure (£4950) were higher by £469 and £744, respectively.

Three of the main sources of income (subscriptions, advertisements and dividends) showed welcome increments, while the fourth (sales of publications) showed little net change, the drop on sales of the *Reports* being nearly made up by the large rise on sales of the *Proceedings* and special publications.

A further grant (£450 as against £300) by the Royal Society from the Rockefeller Gift is gratefully acknowledged, and will be expended on reprinting some of the war-time Parts of the *Proceedings* as soon as conditions allow.

Administration expenses were about £238 higher than in 1944, the fall of expenditure due to the cessation of fire-watching at the office premises being outweighed by the not unexpected rise in secretarial and clerical expenses.

Expenditure on the Society's publications fell by over £300, in spite of the rise in cost of producing the *Proceedings*, because no volume of the *Reports on Progress in Physics* appeared during the year. An important increase in expenditure is that in respect of *Science Abstracts*.

The total value of the investments increased during the year by £4498 to £15,764. The Addenbrooke Bequest and the donations to the Holweck Prize Fund account for £1212 of this increase, and there was a new investment of £1000 in 3 % Savings Bonds; the remaining £2286 represents the appreciation of the older investments. (The values of these shown in the Balance Sheet are those obtaining on 31 December 1939.) The investment of the capital of the Holweck Prize in 3 % Defence Bonds will enable an annual award of £100 to be maintained for ten years.

(Signed) CLIFFORD C. PATERSON,
Honorary Treasurer.

12 *April* 1946.

SPECIAL FUNDS

W. F. STANLEY TRUST FUND

	£	s.	d.		£	s.	d.
Carried to Balance Sheet	259	0	0	£300 Southern Railway Preferred Ordinary Stock	199	0	0
				£442 Southern Railway Deferred Ordinary Stock	60	0	0
	£259	0	0		£259	0	0

DUDDELL MEMORIAL TRUST FUND

CAPITAL

	£	s.	d.		£	s.	d.
Carried to Balance Sheet	374	0	0	£400 3½% War Loan Inscribed "B" Account	374	0	0

REVENUE

	£	s.	d.		£	s.	d.
Balance on 31 December 1944	27	17	3	Interest on War Loan	14	0	0
Honoraria	46	5	0	Grant from general fund	75	0	0
Medals and Certificates	14	2	0				
Balance carried to Balance Sheet	15	9					
	£89	0	0		£89	0	0

SPECIAL FUNDS (*contd.*)

HERBERT SPENCER LEGACY

	£	s.	d.		£	s.	d.
Expenditure on Furniture and Equipment during the year	154	3	3	Balance on 31st December 1944	239	7	6
Balance carried to Balance Sheet	85	4	3				
	£239	7	6		£239	7	6

CHARLES CHREE MEDAL AND PRIZE FUND

Capital

	£	s.	d.		£	s.	d.
Balance carried to Balance Sheet	1865	16	4	Balance on 31 December 1944	1865	16	4

Revenue

	£	s.	d.		£	s.	d.
Prize	131	5	0	Balance on 31 December 1944	83	6	2
Medal and Certificate	7	19	0	Interest on Investments	68	17	1
Balance carried to Balance Sheet	12	19	10				
	£152	3	10		£152	3	3

CHARLES VERNON BOYS PRIZE FUND

Capital

	£	s.	d.		£	s.	d.
Balance carried to Balance Sheet	900	0	0	£1132 16*s.* 10*d.* 2½% Consols "B" account	900	0	0

Revenue

	£	s.	d.		£	s.	d.
Prize	26	5	0	Balance on 31 December 1944	7	1	1
Certificate	26	10	0	Interest on Investment	28	6	6
				Balance carried to Balance Sheet	17	7	5
	£52	15	0		£52	15	0

HOLWECK PRIZE FUND

	£	s.	d.		£	s.	d.
Balance carried to Balance Sheet	887	4	11	Donations received	887	4	11

ADDENBROOKE BEQUEST

Capital

	£	s.	d.		£	s.	d.
Balance carried to Balance Sheet	337	0	0	£384 6*s.* 7*d.* 2½% Consols "D" account	337	0	0

Revenue

	£	s.	d.		£	s.	d.
Balance carried to Balance Sheet	9	12	0	Interest on Investment	9	12	0

LIFE COMPOSITION FUND ON 31 DECEMBER 1945

	£	s.	d.
19 Fellows paid £10	190	0	0
1 Fellow paid £15	15	0	0
15 Fellows paid £21	315	0	0
44 Fellows paid £31 10*s.*	1386	0	0
	£1906	0	0

BALANCE SHEET AS ON 31 DECEMBER 1945

BALANCE SHEET AS ON 31 DECEMBER 1945

LIABILITIES

	£ s. d.	£ s. d.
Sundry Creditors		567 3 10
Life Compositions:		
As on 31 December 1944	1674 10 0	
Add Payments during year	252 0 0	
	1926 10 0	
Less Transfer to Income and Expenditure Account	20 10 0	
		1906 0 0
Subscriptions received in advance:		
Members	35 13 6	
Publications	404 1 11	
		439 15 5
SPECIAL FUNDS:		
W. F. Stanley Trust Fund	259 0 0	
Duddell Memorial Trust Fund	374 15 9	
Herbert Spencer Legacy	85 4 3	
Charles Chree Medal and Prize Fund:	1878 16 2	
Charles Vernon Boys Prize Fund	882 12 11	
Holweck Prize Fund	887 4 11	
Addenbrooke Bequest	346 12 0	
		4714 6 0
GENERAL FUND:		
As on 31 December 1944	6805 7 8	
Add "*Progress Reports*" *Reserve Account*	83 1 0	
„ Balance of Income and Expenditure Account	869 1 10	
		7757 10 6
		£15384 15 9

ASSETS

	£ s. d.	£ s. d.
Investments:		
W. F. Stanley Trust Fund	259 0 0	
Duddell Memorial Fund	374 0 0	
Charles Chree Medal and Prize Fund	1866 10 0	
Charles Vernon Boys Prize Fund	900 0 0	
Holweck Prize Fund	875 0 0	
Addenbrooke Bequest	337 0 0	
General Fund	7505 10 0	
		12117 0 0
(Market Value on 31 December 1945: £15764)		
Dividends due on Investments		74 5 7
Inland Revenue—Income Tax recoverable for 1944 and 1945		141 15 10
Subscriptions due		25 7 0
Sundry Debtors		293 1 5
Stock of Paper and Binding Material		173 0 0
30th Exhibition (1946):—*Expenditure to date*		640 9 3
Cash in Post Office Savings Bank Account	1940 11 7	
„ *in hand*	24 15 4	
	1965 6 11	
Less overdraft on current account	45 10 3	
		1919 16 8
		£15384 15 9

We have audited the above Balance Sheet and have obtained all the information and explanations we have required. We have verified the bank balances and the Investments. In our opinion such Balance Sheet is properly drawn up so as to exhibit a true and correct view of the state of the Society's affairs according to the best of our information and the explanations given to us and as shown by the books of the Society.

SPENCER HOUSE, SOUTH PLACE, E.C. 2.
5th April 1945

KNOX, CROPPER & Co.,
Chartered Accountants.

INCOME AND EXPENDITURE ACCOUNT FOR THE YEAR ENDED 31 DECEMBER 1945

1944 £	Expenditure	£ s. d.	£ s. d.
	To		
225	"Science Abstracts"		801 0 0
1686	"Proceedings"	2104 12 3	
59	Agenda Papers and Notices	93 1 0	
779	"Reports on Progress in Physics"	21 0 0	
			2218 13 3
234	Postage on Publications and General Correspondence		335 8 8
62	Expenses at Meetings		94 18 9
26	Honoraria to Special Lecturers		52 10 0
	Administration Expenses:		
910	Secretarial and Clerical Assistance and Office Expenses	1287 18 8	
225	1 Lowther Gardens	84 18 9	
			1372 17 5
	Grant to Duddell Memorial Fund		75 0 0
1144	*Balance, being excess of Income over Expenditure, carried forward to Accumulated Fund*		869 1 10
£5350			£5819 9 11

1944 £	Income	£ s. d.	£ s. d.
	By		
	Subscriptions:		
54	Entrance Fees	77 14 0	
2005	Fellows	2175 1 6	
147	Student Members	143 16 0	
23	Colour Group	28 10 0	
66	Optical Group	50 7 0	
148	For "Science Abstracts" and Advance Proofs	142 7 0	
			2617 15 6
	Sales:		
1019	"Proceedings"	1328 1 9	
852	"Reports on Progress in Physics"	495 4 0	
48	Special Publications	88 9 4	
			1911 15 1
334	Advertisements in "Proceedings"		448 4 8
304	Dividends from Investments		371 4 8
50	Transfer from Life Composition Fund of amounts paid by Fellows now deceased		20 10 0
300	Publications Grant by the Royal Society from the Rockefeller Foundation Gift		450 0 0
£5350			£5819 9 11